

CHAPTER V

CONCLUSIONS AND OPEN PROBLEMS

5.1 Conclusions

We collect and present some families of super vertex-magic graphs and some graphs that are not super vertex-magic graphs. There are results as follows :

Super vertex-magic graphs :

1. A cycle C_n where n is odd. ([6])
2. A complete graph K_n where n is odd. ([6])
3. A complete graph K_n where $n \equiv 0 \pmod{4}$ and $n \neq 4$. ([4])
4. A circulant graph $C_n(1, m)$ where $n \geq 5$, n is odd, and $m \in \{2, 3, \dots, \frac{n-1}{2}\}$. ([1])
5. A circulant graph $C_n(1, 2, m)$ where $n \geq 7$, n is odd, and $m \in \{2, 3, \dots, \frac{n-1}{2}\}$.
6. A circulant graph $C_n(1, 3, m)$ where $n \geq 9$, n is odd, and $m \in \{3, 4, \dots, \frac{n-1}{2}\}$.
7. A circulant graph $C_n(1, 2, 3, 4)$ where $n \geq 9$ and n is odd.
8. A circulant graph $C_n(1, 2, 3, 4, 5)$ where $n \geq 11$ and n is odd.
9. Graphs $k(C_3 + C_6)$, $k(C_3 + C_8)$, $k(C_3 + C_{10})$, $k(C_5 + C_6)$, $k(C_3 + C_3 + C_7)$
and $k(C_4 + C_4 + C_7)$ where k is odd.

Graphs that are not super vertex-magic graphs :

1. The Petersen graph.
2. A wheel graph W_n where $n \geq 4$. ([6])

3. A ladder graph L_n where $n \geq 3$. ([6])
4. A fan graph F_n where $n \geq 3$. ([6])
5. A friendship graph f_n where $n \geq 3$. ([6])
6. A prism graph Pr_n where $n \geq 3$ and n is odd.
7. A book graph B_n where $n \geq 3$.
8. A crown graph Cr_n where $n \geq 6$ and n is even.

5.2 Open Problems

There are some open problems for future work as follows :

Can we find super vertex-magic total labeling of the following graphs?

1. A circulant graph $C_n(1, s, m)$ where $n \geq 2m + 1$, n is odd, and

$$m \in \{s+1, s+2, \dots, \frac{n-1}{2}\}.$$

2. A circulant graph $C_n(1, 2, 3, m)$ where $n \geq 9$, n is odd, and

$$m \in \{4, 5, \dots, \frac{n-1}{2}\}.$$

3. A circulant graph $C_n(1, 2, 3, 4, m)$ where $n \geq 11$, n is odd, and

$$m \in \{5, 6, \dots, \frac{n-1}{2}\}.$$

4. A prism graph (Pr_n) where $n \geq 6$ and n is even.

5. Graphs $k(C_4 + C_7)$, $k(C_3 + C_4 + C_4)$, and $k(C_3 + C_3 + C_5)$ where k is odd.

6. Graphs $k(C_4 + C_9)$, $k(C_5 + C_8)$, $k(C_6 + C_7)$, $k(C_3 + C_4 + C_6)$, $k(C_3 + C_5 + C_5)$ and $k(C_4 + C_4 + C_5)$ where k is odd.